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MEMORANDUM FOR REGIONAL FORESTER

RE: PROBABLE EFFECT OF COLD TEMPERATURES OF JANUARY, 1937, UPON BARKBEETLE INFESTATIONS IN CALIFORNIA

J.M. MILLER
BERKELEY, CALIFORNIA
FEBRUARY 18, 1937

FILE COPY FOREST INSECT LABORATORY, UNIVERSITY OF CALIFORNIA, BERKELEY, CALIFORNIA.

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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

WASHINGTON, D. C.

341 Giannini Hall, U. of C.,
Berkeley, California

February 18, 1937

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MEMORANDUM FOR REGIONAL FORESTER

Re: Probable effect of cold temperatures of January, 1937, upon barkbeetle infestations in California.

The cold wave that visited California in January, 1937, and caused great harm to citrus fruits, apparently has been of some benefit in the pine forests of northern California which supply box lumber for the fruit industry.

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When low temperatures ranging well below zero Fahr. prevail in the forest for a number of hours, mortality nearly always occurs among the over-wintering broods of the western pine beetle. Samples containing western pine beetle broods recently received from the Lassen and Sierra National Forests by the Forest Insect Laboratory at Berkeley, California, show a mortality ranging from 15 to 80 percent. These mortalities are unquestionably the result of the recent cold spell. More detailed studies and surveys will be made by the Bureau of Entomology and Plant Quarantine within the next few months to determine the extent and effects of the recent cold wave upon current barkbeetle infestations and its bearing upon prospective timber losses for the season of 1937.

From the history of barkbeetle infestations which have followed similar conditions in the past, entomologists have some background upon which to appraise the effects of the recent cold wave. They believe that the best that can be expected from this 1937 freeze is a temporary setback to beetle populations for about one season. A cold spell in December, 1924 which brought temperatures below -20° F. in Eastern Oregon produced high winter mortalities of the western pine beetle in that region and to some extent in Northeastern California. This was followed by low infestations during the season of 1925, but during the following two years (1926-7) the areas subjected to the freeze were visited by more severe barkbeetle epidemics and higher timber losses than had occurred preceeding the cold spell.

Again in December, 1932, a cold wave reached throughout the eastside pine belt of northeastern California and resulted in mortalities of the western pine beetle as high as 80 to 90 percent. The following summer was marked by very low active infestations throughout the area effected, but by the fall of that year, barkbeetle populations were well along the road to recovery. The two following seasons of 1934 and 1935 were characterized by wide-spread epidemics with resulting timber losses which have practically depleted the merchantable timber in certain areas that had been benefited by high mortality resulting from the 1932 cold spell.

The freeze of 1937 has apparently extended somewhat further south than these two preceeding ones and its temporary benefits will probably be found to be more widespread. However, there is little chance that it has eliminated the barkbeetle as a threat to the future timber supply. Only similar cold spells occurring every winter would be expected to function as a permanent and satisfactory natural control of the beetles. The past 13 years have witnessed only three cold spells of sufficient intensity to produce any appreciable kill of the overwintering broods.

One reason why cold does not exterminate barkbeetle populations is that all individuals of a species are not equally susceptible and a certain percent always survive. In northeastern California a species of flathead which often works with the western pine beetle in the buildup of aggressive infestations is more resistant to cold and enough of these insects survive to initiate another outbreak.

It is hoped that the recent cold wave combined with a low point in the infestation cycle throughout the state during 1936, will eliminate the necessity for any large control program during the coming year. This should permit a breathing spell in which to get underway the proposed research program and hazard zonation surveys that are now contemplated. So long as there are large areas of mature pine timber susceptible to these infestations, severe barkbeetle epidemics will surely return as they have in the past. The present situation is a favorable one in which to initiate the surveys that will outline the areas in which these infestations are likely to occur in the future and to develop plans for the management and protection of these areas that will meet the problem when it again becomes acute.

J. M. Miller
Senior Entomologist

JMM:ML